

Appl. Ser. No. 10/809,108
Response dated July 6, 2005
Reply to Office action of June 15, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A multi-level digital data communication system including:
at least one data communication device comprising means, responsive to instructional codes, for processing digital data messages having address codes and data codes and for routing said data messages,
means for storing digital data messages coupled to said processing means,
first means for communicating said data messages as first ~~type~~ radio frequency transmission signals, and
second means for communicating said data messages as second ~~type~~ radio frequency transmission signals,
said first and second radio frequency communication means being communicatively coupled to said processing means for selectively transmitting and receiving data messages to and from each of said first and second radio frequency communication means;
at least one first ~~type~~ data terminal device comprising
first communication means for communicating said data messages as said first ~~type~~ radio frequency transmission signals, and means, coupled to said first communication means of said data terminal device, for transducing data signals of data messages of communication between said at least one data communication device and said at least one first ~~type~~ data terminal device;
and
at least one data communication interface device comprising
second means for communicating said data messages at said second ~~type~~ radio frequency transmission signals, and
third means for communicating said data messages to a data station.

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2. (Currently Amended) A The communication system according to claim 1, wherein at least one data communication device is a portable device, further comprising:

a self-contained electrical power source electrically coupled respectively to said processing means, said storage means and said first and second radio frequency communication means.

3. (Currently Amended) A The communication system according to claim 2, wherein said at least one portable data communication device further comprises means for receiving power from an external power source as an alternative power source to said self-contained power source.

4. (Currently Amended) A The communication system according to claim 2, wherein

said first radio frequency communication means of said at least one data communication device and of said at least one data terminal device are low power transceivers operable on a first channel over a first range, and

said second radio frequency communication means of said at least one data communication interface device and of said at least one communication device are high power transceivers operable on a second channel over a second range.

5. (Currently Amended) A The A communication system according to claim 4, wherein said at least one first ~~type~~ data terminal device is a plurality of first ~~type~~ data terminal devices, said plurality of first ~~type~~ data terminal devices being communicatively coupled via said lower power transceivers operable on said first channel upon becoming located within said first range.

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6. (Currently Amended) A The communication system according to claim 5, wherein each of said first data terminal devices further comprises means for processing said data messages having a first predetermined address code and data codes and for addressing data messages with a second predetermined address code in response to instructional codes, and means for storing digital data messages coupled to said processing means.

7. (Currently Amended) A The communication system according to claim 6, wherein one of the group consisting of said plurality of first type data terminal devices communicatively coupled to a selected one of said data communication devices and said selected data communication device includes means for controlling communication among said low power transceivers operable within said first range from said selected one of said devices.

8. (Currently Amended) A The communication system according to claim 7, wherein said means for controlling communication among said low power transceivers comprises means for storing program instructions, said program instruction storing means being coupled to the processing means of said one device, said program instruction storing means including stored instruction codes for selectively adding predetermined address codes to at least portions of received data messages and for directing said addressed portions to be re-transmitted as data messages through the low power transceiver of said one device.

9. (Currently Amended) A The communication system according to claim 1, wherein:

said at least one first ~~type~~ data terminal device is a plurality of first type data terminal devices, at least one of said plurality of first ~~type~~ data terminal devices being communicatively coupled to each of said data communication devices via said first channel;

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said second means of said at least one data communication interface device for communicating said data messages at said second type radio frequency transmission signals comprises

means for selectively addressing data messages to any of said plurality of data communication devices.

10. (Currently Amended) A The communication system according to claim 9, wherein the plurality of data communication devices are portable devices, each further comprising:

a self-contained electrical power source electrically coupled respectively to said processing means, said storage means and said first and second radio frequency communication means.

11. (Currently Amended) A The communication system according to claim 10, wherein

said first radio frequency communication means of said plurality of data communication devices and of said plurality of data terminal devices are low power transceivers operable on a first channel a first range, and

said second radio frequency communication means of said at least one data communication interface device and of said plurality of communication devices are high power transceivers operable on a second channel over a second range.

12. (Currently Amended) A The communication system according to claim 11, wherein said at least one first type data terminal device being communicatively coupled to each of said plurality of data communication devices is a plurality of the first type data terminal devices, said first type data terminal devices being communicatively coupled to the respective

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one of the data communication devices via said low power transceivers operable on said first channel upon becoming located within said first range of the respective one of said data communication devices.

13. (Currently Amended) A The communication system according to claim 12, wherein each of said data terminal devices further comprises means for processing said data messages having a first predetermined address code and data codes and for addressing data messages with a second predetermined address code in response to instructional codes, and means for storing digital data messages coupled to said processing means.

14. (Currently Amended) A The communication system according to claim 13, wherein a one of a group consisting of said plurality of first ~~type~~ data terminal devices communicatively coupled to a selected one of said data communication devices and said communication device includes means for controlling communication among said low power transceivers operable within said first range from said one of said devices.

15. (Currently Amended) A The communication system according to claim 14, wherein said means for controlling communication among said low power transceivers comprises means for storing program instructions, said program instruction storing means being coupled to the processing means of said one device, said program instruction storing means including stored instruction codes for adding an address code to at least portions of received data messages and for directing said addressed portions for re-transmission as data messages to the low power transceiver of said one device.

16. (Currently Amended) A The communication system according to claim 15, further comprising a central data processing station, and said at least one data communication

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interface device further comprising means for relaying data messages between said central data processing station and at least one of said data communication devices.

17. (Currently Amended) A data communication system comprising the combination of:

at least one first type data terminal device including

first means for communicating digital data messages having address codes and data codes as first type radio frequency transmission signals, and

means, coupled to said first radio frequency communication means of said data terminal device, for transducing data signals; and

a data communication device including

first means for communicating data messages as said first type radio frequency transmission signals, said first radio frequency communication means of said data communication device and said first radio frequency communication means of said at least one data terminal device constituting a radio frequency communication link between said at least one data terminal device and said data communication device,

means, communicatively coupled to said first radio frequency communication means of said communication device, for processing data messages and including, means responsive to instructional codes and to predetermined ones of the address codes for routing data messages to said first radio frequency communication means of said communication device for communication over said link to said at least one data terminal device,

means, coupled to said processing means, for storing digital data including processed digital data and digital messages, and second means for communicating data messages at second type radio frequency transmission signals, said second radio frequency communication means being communicatively coupled to said processing means.

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18. (Currently Amended) A The communication system according to claim 17, wherein said transducing means of said at least one first ~~type~~ data terminal comprises an input means for receiving instructional impulses of a first form from outside of the communication system and for translating said instructional impulses into digital electrical address and data codes.

19. (Currently Amended) A The communication system according to claim 18, wherein said receiving and translating input means comprises a magnetic card reader and the instructional impulses of a first form are magnetic data pulses to be translated by an electromagnetic transducer into digital electrical address and data codes.

20-37. (Cancelled)

38. (Currently Amended) A method of communicating digital data messages between devices of a communication system, the devices of the system having transceivers capable of sending and receiving data messages, thereby rendering each device capable of becoming a data message originating device and a data message destination device of the communication system, the communication system of such devices including at least a plurality of first ~~type~~ data terminal devices, at least one first ~~type~~ communication device, a second ~~type~~ data communication interface device and a data processing device communicatively coupled to said second ~~type~~ data communication interface device, the method comprising:

generating data message for communication from an originating device of said communication system to a destination device of said communication system;

communicating any data messages generated by said first ~~type~~ data terminal devices at a first communication level to said at least one first ~~type~~ data communication device;

communicating any data message originating from said data processing device through

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said data communication interface device and at a second communication level to said at least one first ~~type~~ data communication device;

re-addressing data message received by said at least one first ~~type~~ data communication device to the respective destination device; and

communicating re-addressed data messages from said first ~~type~~ data communication device at said first communication level to the respective destination data terminal device, and at said second communication level through said data communication interface device to the destination data processing device.

39-64. (Cancelled)

65. (Currently Amended) A multi-level digital data communication system comprising:

at least one data communication device comprising

a microprocessor responsive to instructional codes arranged to process digital data messages having address codes and data codes and to route said data messages,

a memory arranged to store digital data messages coupled to said microprocessor,

a first transceiver arranged to communicate said data messages as first ~~type~~ radio frequency transmission signals, and

a second transceiver arranged to communicate said data messages as second ~~type~~ radio frequency transmission signals, said first and second transceivers being communicatively coupled to said microprocessor for selectively transmitting and receiving data messages to and from each of said first and second transceivers;

at least one first ~~type~~ data terminal device comprising a third transceiver arranged to communicate said data messages as said first ~~type~~ radio frequency transmission signals, the microprocessor processing data signals of data messages of communication between said at least

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one data communication device and said at least one first ~~type~~ data terminal device; and
at least one data communication interface device comprising
a fourth transceiver arranged to communicate said data messages at said second ~~type~~
radio frequency transmission signals, and
a link arranged to communicate said data messages to a data station.

66. (Currently Amended) A The communication system according to claim 65, wherein the at least one data communication device comprises a portable device further comprising a self-contained electrical power source electrically coupled respectively to said microprocessor, said memory and said first and second transceivers.

67. (Currently Amended) A The communication system according to claim 65, wherein said at least one portable data communication device further comprises a connection arranged to receive power from an external power source.

68. (Currently Amended) A The communication system according to claim 65, wherein

said first transceiver and said third transceiver comprise low power transceivers operable on a first channel over a first range, and

said second transceiver and said fourth transceiver comprise high power transceivers operable on a second channel over a second range.

69. (Currently Amended) A The A communication system according to claim 68, wherein said at least one first ~~type~~ data terminal device is a plurality of first ~~type~~ data terminal devices, said plurality of first ~~type~~ data terminal devices being communicatively coupled via said lower power transceivers operable on said first channel upon becoming located within said first

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range.

70. (Currently Amended) A The communication system according to claim 65, wherein said at least one first ~~type~~ data terminal devices further comprises a second microprocessor arranged to process said data messages having a first predetermined address code and data codes and arranged to address data messages with a second predetermined address code in response to instructional codes, and a memory arranged to store digital data messages coupled to said second microprocessor.

71. (Currently Amended) A The communication system according to claim 70, wherein the at least one first ~~type~~ data terminal device comprises a plurality of first ~~type~~ data terminal devices, said system further comprising a controller arranged to control communication among said plurality of first ~~type~~ data terminal devices.

72. (Currently Amended) A The communication system according to claim 71, wherein said controller comprises a program memory arranged to store program instructions coupled to the controller; said program memory including stored instruction codes for selectively adding predetermined address codes to at least portions of received data messages and for directing said addressed portions to be re-transmitted as data messages to the plurality of first ~~type~~ data terminal devices.

73. (Currently Amended) A The communication system according to claim 70, wherein:

said at least one first ~~type~~ data terminal device is a plurality of first ~~type~~ data terminal devices, at least one of said plurality of first ~~type~~ data terminal devices being communicatively coupled to said at least one data communication device; and

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said second microprocessor is arranged to selectively address data messages to any of said plurality of data communication devices.

74. (Currently Amended) A data communication system comprising the combination of:

at least one first ~~type~~ data terminal device including

a first transceiver arranged to communicate digital data messages having address codes and data codes as first ~~type~~ radio frequency transmission signals, and

a first microprocessor coupled to said first transceiver arranged to transduce data signals; and

a data communication device including

a second transceiver arranged to communicate data messages as said first ~~type~~ radio frequency transmission signals, said first and second transceivers comprising a radio frequency communication link between said at least one data terminal device and said data communication device,

a second microprocessor communicatively coupled to said second transceiver arranged to process data messages, the second microprocessor being responsive to instructional codes and to predetermined ones of the address codes for routing data messages to said first transceiver over said link, and

a memory coupled to said second microprocessor arranged to store digital data including processed digital data and digital messages; and

a third transceiver arranged to communicate data messages at second ~~type~~ radio frequency transmission signals, said third transceiver being communicatively coupled to said second microprocessor.

75. (Currently Amended) A The communication system according to claim 74, and

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further comprising an input arranged to receive instructional impulses of a first form from outside of the communication system and for translating said instructional impulses into digital electrical address and data codes.

76. (Currently Amended) A The communication system according to claim 75, wherein said input comprises a magnetic card reader and the instructional impulses of a first form are magnetic data pulses to be translated by an electromagnetic transducer into digital electrical address and data codes.